

# Challenges and Opportunities of Digital Bioprinting Technology for Future Medicine

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Inkjet-based digital bioprinting technology encompasses the generation, control and deposition of cell-laden picolitre liquid drops. Besides graphic printing applications, new opportunities for digital printing are starting to be exploited in precise patterning of cells and biomaterials for tissue engineering and regenerative medicine. This talk begins with the principle and processes of digital printing, showing how living cells are ejected from micron-sized nozzle with single-cell level accuracy. Methods on how to evaluate and improve rheological properties of bioinks for reliable printing will be discussed. Then, our recent studies on the applications of 3D inkjet bioprinting will be introduced, including single cell printing for quantification of tumor heterogeneity, 2D direct patterning of cells into liquid medium for virus transfer study, and 3D lung normal and disease models for drug efficacy testing and toxicology, etc. This talk demonstrates that drop-on-demand, cell-accuracy digital printing can be a versatile tool to fabricate complex tissues for drug discovery, disease model, and toxicity.

## References

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